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EFFECT OF FYM, N P K AND MICRONUTRIENTS ON YIELD OF TOMATO (*LYCOPERSICON ESCULENTUM* MILL.) CV. HEEM SOHNA UNDER PROTECTED CULTIVATION

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ABSTRACT

The experiment was carried out in vegetable Research Farm, during Mid-November to 8- May with following combination of which was T_1 (control), T_2 (FYM 1.5 kg / m^2), T_3 (FYM 2.5 kg / m^2), T_4 (30.86 g N, 18.51 g P and 18.51 g K) / m^2), T_5 (30.86 g N 18.51 g P and 18.51 g K) / m^2 + FYM 1.5 kg / m^2), T_6 (30.86 g N 18.51 g P and 18.51 g K / m^2 + FYM 2.5 kg / m^2), T_7 (46.29 g N 37.02 g P and 37.02 g K) / m^2), T_8 (46.29 g N 37.02 g P and 37.02 g K) / m^2+ FYM 1.5 kg / m^2) T_9 (46.29 g N 37.02 g P and 37.02 g K) / m^2+ FYM 2.5 kg / m^2), T_{10} (Micronutrient 2.5ml/l) T_{11} (FYM 1.5 kg / m^2+ Micronutrient 2.5ml/l) T_{12} (FYM 2.5 kg / m^2 + Micronutrient 2.5ml/l) T_{13} (30.86 g N 18.51 g P and 18.51 g K) / m^2 + Micronutrient 2.5ml/l) T_{14} (30.86 g N 18.51 g P and 18.51 g K) / m^2 + FYM 1.5 kg / m^2 + Micronutrient 2.5ml/l) T_{15} ((30.86 g N 18.51 g P and 18.51 g K) / m^2 + FYM 2.5 kg / m^2 + Micronutrient 2.5ml/l) T_{16} (46.29 g N 37.02 g P and 37.02 g K) / m^2+ Micronutrient 2.5ml/l) T_{17} (46.29 g N 37.02 g P and 37.02 g K) / m^2+ FYM 1.5 kg / m^2+ Micronutrient 2.5ml/l) and T_{18} (46.29 g N 37.02 g P and 37.02 g K) / m^2+ FYM 2.5 kg / m$^{2\ +}$ Micronutrient 2.5ml/l)The cultivar of tomato was "heem shona" syngenta company. The highest fruit weight (73.17 g)was recorded in T_{17} and the highest No. fruit per plant (84.33), yield per plant (6.008 kg), total yield per plastic house (220 m^2) (3. 172 tones) was obtained in T_{18} treatment.

KEYWORDS: Tomato, *Lycopersicon esculentum* Mill, Fruit Per Plant, Fruit Weight, Total Yield and "Heem Sohna"

INTRODUCTION

Tomato *(Lycopersicon esculentum* Mill.) belongs to family solanaceae having chromosome number (2n=24), it is a self pollinated crop. Tomato one of most popular and nutritious fruit vegetable; widely grown around the world and second ranked after potato. Tomato has its origin in Peru, Ecuador and Bolivia on the basis of availability of numerous wild and cultivated relatives of the tomato in this area. From its centre of origin, the tomato first moved to Mexico for domestication and cultivation. From Mexico it arrived in Europe by 1554. The major tomato growing countries are China, India USA, Turkey Egypt and Italy In the world total area under tomato is 4582438 thousand ha with production of 150513813 thousand tones and with productivity of 32.8 tones/ha in 2010 - 2011. Total area under tomato crop in India is assessed to be 0.865 million ha with the productivity of (16.826.000 tones) with productivity of 19.5 tones/ha [3]. Tomato is consumed fresh and also in processed form of which one-third is used as processed products and two-third of tomato fruit is consumed fresh. The area under tomato is constantly increasing to produce more quality yield because it is a major vegetable in the menu of human diet. The fruits are eaten raw or cooked, large quantities of tomato are used to produce soup, juice, ketchup, puree, paste and powder. Tomato is a rich source of vitamin, minerals, organic acids, sugars, ascorbic acids, acidity and lycopene. Nutritive value varies in different cultivars depending upon the agro-climatic

condition. It is also rich in nutrients and calories. It is a good source of Fe and vitamin A, B, and C. A .Edible portion of Tomato contain. Energy 18 kcal, protein 0.95 g, fat 0.11g, carbohydrate 4.01 g sugars total 2.49 g, Ca 11mg, Fe 0.68 mg, Mg 9 mg, P 28 mg, K 218 mg, Na 11 mg, Zn 0. 14 mg, Vitamin C 22.8 mg Thiamin 0.036 mg, Riboflavin 0.022 mg, Vitamin B-6 0.079 mg, Vitamin E 0.56 mg, Fatty acids, total saturated 0.015 g Fatty acids, total polyunsaturated 0.044 g per 100 g [8]**.** Consumption of tomato and its products can significantly reduce the risk of developing of colon, rectal, and stomach cancer. Recent studies suggest that tomatoes contain the antioxidant lycopene, the most common form of carotenoid, which markedly reduces the. Risk of prostate cancer [4].

To improve the yield and quality of the produce, it is necessary to pay attention on the optimum balanced use of nutrients through fertilizer application. Tomato requires large quantities of both organic and inorganic nutrients are required for economic yields of tomato. Nitrogen, phosphate, potash, FYM and micronutrient are important for tomato. Fertilizers play a key role in the production of both quantity and quality tomato. Tomato plants should be providing with adequate fertilizer Nitrogen, phosphorus and potassium are the main elements which affect on growth yield and quality of tomato plants. Effect of nitrogen on vegetative and fruit yield is more obvious than other nutrients, as it promotes the setting of flowers and fruits . Nitrogen is the most commonly used mineral nutrient. It is important for protein production. It plays a pivotal role in many critical functions (such as photosynthesis) in the plant and is a major component of amino acids These amino acids are then used in forming protoplasm, the site of cell division and plant growth. Nitrogen is necessary for enzymatic reactions in plants.

It is a necessary component of several vitamins N is part of the nucleic acids (DNA and RNA). Phosphorous has pronounced effect on tomato plant, level of available Phosphorous throughout the root zone is essential for root development and good utilization of water and other nutrients by the plantcomponent of ATP and transfer energy. The need of tomato plants for potassium, Potassium has been found to improve the quality of tomato fruits, regulation of water and nutrient movement promote flowering and fruiting. Plants require mineral elements for normal growth and development. Plants require to essential for the normal life processes of plants and are needed in very small amounts are called trace elements or minor elements such as boron, zinc and magnesium etc. Boron play an essential role in the development and growth of new cell in the plant meristem improve of fruit quality and fruit set. Zinc is involved in many enzymatic activities and IAA formation to increase flower number and fruit set. Mg is primary constituent of chlorophyll and ATP require Mg. organic manure have the capability of supplying a range of nutrients and improving the physical and biological properties of the soil such as Farm yard manure (FYM) refers to decomposed mixture of dug and urine of farm animals along with the litter and left over material from roughages or fodder fed the cattle. On the average well rotted FYM contains 0.5 per cent N, 0.2 percent P_2O_5 and 0.5 per cent K_2O organic manures are very important for plant and healthy human and create of clean environmental.

There fore, obvious choice is to maintain a natural balance for having a good health and to keep clean environment. Application of organic / inorganic fertilizer in a balance form, which is important to agriculture produce natural. Tomato is a warm season crop and requires relatively long season to produce a profitable crop. it is highly susceptible to frost. Environment factors such as temperature and moisture etc. markedly influence the process of fruit set of tomato and subsequent in fruit development and yield [2]**.**The optimum temperature for most varieties between 18 to 24 °C. But the plant tissues are damaged below 10 °C and above 38 °C . keeping all the fact in view a field experiment entitled To study effect of FYM NPK and micronutrients on yield of tomato (*Lycopersicon esculentum* Mill.) under protected cultivation on hybrid. indeterminate variety heem sohna syngenta company.

MATERIAL AND METHODS

The present investigation **"**Effect of FYM, N P K and Micronutrients on yield of tomato (*Lycopersicon esculentum* Mill.) under protected cultivation**"** was carried out during winter season during mid-November to 8- may the year 2012 - 2013 at Vegetable Research Farm, Department of Horticulture, Allahabad School of Agriculture, Sam Higginbottom Institute of Agriculture,Technology&Science Allahabad (U.P.)The experiment was laid out in split split plot design with three replications and eighteen treatments.

Treatments Detail

T1 (Control)

T2 FYM 1.5 kg / m^2

T3 FYM 2.5 kg / m^2

T4 (30.86 g N, 18.51 g P and 18.51 g K) / m^2

T5 (30.86 g N, 18.51 g P and 18.51 g K) / m^2 + FYM 1.5 kg / m^2

T6 (30.86 g N 18.51 g P and 18.51 g K) / m^2 + FYM 2.5 kg / m^2

T7 (46.29 g N 37.02 g P and 37.02 g K) / m^2

T8 (46.29 g N 37.02 g P and 37.02 g K) / m^2+ FYM 1.5 kg / m^2

T9 (46.29 g N 37.02 g P and 37.02 g K) / m^2+ FYM 2.5 kg / m^2

T10 Micronutrient 2.5ml/l

T11 FYM 1.5 kg / m^2+ Micronutrient 2.5ml/l

T12 FYM 2.5 kg / m^2 + Micronutrient 2.5ml/l

T13 (30.86 g N 18.51 g P and 18.51 g K) / m^2 + Micronutrient 2.5ml/l

T14(30.86 g N 18.51 g P and 18.51 g K) / m^2 + FYM 1.5 kg / m^2 + Micronutrient 2.5ml/l

T15 T15 (30.86 g N 18.51 g P and 18.51 g K) / m^2 + FYM 2.5 kg / m^2 + Micronutrient 2.5ml/l

T16 (46.29 g N 37.02 g P and 37.02 g K) / m^2+ Micronutrient 2.5ml/l

T17 (46.29 g N 37.02 g P and 37.02 g K) / m^2+ FYM 1.5 kg / m^2+ Micronutrient 2.5ml/l

T18 (46.29 g N 37.02 g P and 37.02 g K) / m^2+ FYM 2.5 kg/m^2 + Micronutrient 2.5ml/l

A normal sized flat bed (1.0 m × 1.0 m) was prepared in the departmental nursery in the month of 7 October 2012. After arriving seedling to second true leaves, uniform size and healthy seedlings were selected for the transplanting into the sack to planting seedling separately. after arriving to the forth true leaves transplanting was done into the main field. The fertilizer was applied @ recommended dose viz., 30.86 g N 18.51 g P_2O_5 and 18.51 g K_2O per m^2 and 46.29 g N 37.02 g P_2O_5 and 37.02 g K_2O per m^2 half of the dose of nitrogen and entire quantity of P and K were applied as a basal dose before transplanting and well mixed with the soil and adding 1.5 kg and 2.5 kg farm yard manure (FYM) per m^2 according to the treatments. Remaining dose of nitrogen was applied at 40 days after transplanting, micronutrient @ 2.5 ml / l was sprayed at two weeks after transplanting and at flowering, The fertilizers were given in the form of urea, SSP and MOP FYM and Micronutrient SONAMIN - L

RESULTS AND DISCUSSIONS

Number of Fruits per Plant

The data presented in table 1 clearly showed that the micronutrient played significant role in affecting number of fruits per plant. The maximum number of fruits per plant was recorded statistically significant in micronutrient application @ 2.5 $ml.l^{-1}$ which was recorded (51.67) superior over control which was recorded (41.35). Result showed that NPK significantly affected on number of fruits per plant where NPK levels superior over control, where (46.29 $g.m^2$) level gave highest number of fruits per plant (60.60), followed by @ 30.86 $g.m^2$ (46.80). The minimum number of fruits per plant was noticed with Control (32.13) .Result showed that FYM significantly affected on number of fruits per plant where FYM levels superior over control, where (2.5 $kg.m^2$) level gave highest number of fruits per plant (61.59) followed by @ 1.5 kg. m^2 (47.04). The minimum number of fruits per plant was noticed with Control (30.90).

NPK combination with micronutrient played significant role in affecting number of fruits per plant where superior interaction (46.29 $g.m^2$ NPK + 2.5 $ml.l^{-1}$ micronutrient) on other interaction which was recorded (68.44), followed by @46.29 $g.m^2$ NPK only (52.76). The minimum number of fruits per plant was noticed with Control (28.43).FYM combination with micronutrient played significant role in affecting number of fruits per plant where superior interaction (2.5 $kg.m^2$ FYM + 2.5 $ml.l^{-1}$ micronutrient) on other interaction which was recorded (67.45), followed by @ 2.5 $kg.m^2$ FYM only (55.72). The minimum number of fruits per plant was noticed with Control (27.32).FYM combination with NPK played significant role in affecting number of fruits per plant where superior interaction (2.5 $kg.m^2$ FYM + 46.29 $g.m^2$ NPK) on other interaction which was recorded (75.88), followed by @ 2.5 $kg.m^2$ FYM + 30.86 $g.m^2$ NPK (65.54). The minimum number of fruits per plant was noticed with Control (22.03). The maximum number of fruits per plant (84.33) were indicated in interaction between FYM_2 and NPK_2 under M_1 followed by @ FYM_1 and NPK_2 under M_1 (75.52). The minimum number of fruits per plant was noticed with Control (18.92). These result are in close conformity with the finding of [5] **and** [6].

Fruit Weight (g)

The data presented in table 2 clearly showed that micronutrient played significant role in affecting fruit weight, the maximum fruit weight was recorded statistically significant in micronutrient application @ 2.5 $ml.l^{-1}$ which was recorded (64.37 g). superior over control which was recorded (61.54 g).Result showed that NPK significantly affected on fruit weight where NPK levels superior over control, where (46.29 $g.m^2$) level gave highest fruit weight (67.50 g), followed by @ 30.86 $g.m^2$ (62.56 g). The minimum fruit weight was noticed with Control (58.81g).Result showed that FYM significantly affected on fruit weight where FYM levels superior over control, where (2.5 $kg.m^2$) level gave highest fruit weight (67.28 g) followed by @ 1.5 $kg.m^2$ (62.83 g). The minimum fruit weight was noticed with Control (58.75 g).NPK combination with micronutrient played significant role in affecting fruit weight where superior interaction (46.29$g.m^2$ NPK + 2.5 $ml.l^{-1}$ micronutrient) on other interaction which was recorded (68.94g), followed by @ 46.29 $g.m^2$ NPK only (66.06g).

The minimum fruit weight was noticed with Control (58.00 g).FYM combination with micronutrient played significant role in affecting fruit weight where superior interaction (2.5 $kg.m^2$ FYM + 2.5 $ml.l^{-1}$ micronutrient) on other interaction which was recorded (68.39 g), followed by @ 2.5 $kg.m^2$ FYM only (66.17 g). The minimum fruit weight was noticed with Control (57.78 g).FYM combination with NPK played significant role in affecting fruit weight where superior interaction (2.5 $kg.m^2$ FYM + 46.29 g. m^2 NPK) on other interaction which was recorded (72.50 g), followed by

@ 1.5 kg. m^2 FYM + 46.29 g.m^2 NPK (69.50 g). The minimum fruit weight was noticed with Control (57.42 g). The maximum fruit weight (73.17 g) were indicated in interaction between FYM_1 and NPK_2 under M_1 followed by @ FYM_2 and NPK_1 under M_1 (72.17 g). The minimum fruit weight was noticed with Control(57.00 g). The same result was reported by [7] **and** [5].

Fruit Yield per Plant (kg)

The data presented in table 3 clearly showed that the micronutrient played significant role in affecting yield per plant. The maximum yield per plant was recorded statistically significant in micronutrient application @ 2.5 ml.l^{-1} which was recorded (3.428 kg) superior over control which was recorded (2.615 kg). Result showed that NPK significantly affected on yield per plant where NPK levels superior over control, where (46.29 g.m^2) level gave highest yield per plant (4.171 kg), followed by @ 30.86 g.m^2 (2.994 kg). The minimum yield per plant (1.900 kg) was noticed with Control. Result showed that FYM significantly affected on yield per plant where FYM levels superior over control where (2.5 kg . m^2) level gave highest yield per plant (4.211 kg),followed by @ 1.5 kg.m^2 (3.028 kg). The minimum yield per plant was noticed with Control (1.825 kg). NPK combination with micronutrient played significant role in affecting yield per plant where superior interaction (46.29 g.m^2 NPK + 2.5 ml.l^{-1} micronutrient) on other interaction which was recorded (4.786 kg), followed by @ 46.29 g.m^2 NPK only (3.555 kg).

The minimum yield per plant was noticed with Control (1.654 kg).FYM combination with micronutrient played significant role in affecting yield per plant where superior interaction (2.5 kg.m^2 FYM + 2.5 ml.l $^{-1}$ micronutrient) on other interaction which was recorded (4.672 kg), followed by @ 2.5 kg.m^2 FYM only (3.750 kg). The minimum yield per plant was noticed with Control (1.581 kg).FYM combination with NPK played significant role in affecting yield per plant where superior interaction (2.5 kg.m^2 FYM + 46.29 g.m^2 NPK) on other interaction which was recorded (5.485 kg) followed by @ 2.5 kg.m^2FYM + 30.86 g.m^2 NPK (4.527 kg). The minimum yield per plant was noticed with Control (1.262 kg). The maximum yield per plant (6.008 kg) was indicated in interaction between FYM_2 and NPK_2 under M_1 followed by @ FYM_1 and NPK_2 under M_1 (5.523 kg). The minimum yield per plant was noticed with Control (1.076 kg). These result are in close conformity with the finding of [6] and [1].

Fruit Yield per Plastic House (220 m^2) (Tones)

The data presented in table 4 clearly showed that the micronutrient played significant role in affecting total yield per plastic house 220 m^2. The maximum total yield per plastic house 220 $m^2$was recorded statistically significant in micronutrient application@ 2.5 ml.l^{-1} which was recorded (1.810 tones) superior over control which was recorded (1.381 tones).Result showed that NPK significantly affected on total yield per plastic house 220 $m^2$where NPK levels superior over control where (46.29 g.m^2) level gave highest total yield per plastic house 220 m^2 (2.202 tones), followed by @ 30.86 g.m^2 (1.581 tones). The minimum total yield per plastic house 220 $m^2$was noticed with Control (1.003 tones). Result showed that FYM significantly affected on total yield per plastic house 220 m^2 where FYM levels superior over control where (2.5 kg.m^2) level gave highest total yield per plastic house 220 m^2 (2.224 tones) followed by @ 1.5 kg.m^2 (1.599 tones). The minimum total yield per plastic house 220 $m^2$was noticed with Control (0.964 tones).NPK combination with micronutrient played significant role in affecting total yield per plastic house 220 m^2 where superior interaction (46.29 g.m^2 NPK + 2.5 ml .l^{-1} micronutrient) on other interaction which was recorded (2.527 tones), followed by @ 46.29 g.m^2 NPK only (1.877 tones).

The minimum total yield per plastic house 220 m^2 was noticed with Control (0.873 tones).FYM combination with micronutrient played significant role in affecting total yield per plastic house 220 m^2 where superior interaction

(2.5 kg.m^2 FYM + 2.5 ml.l^{-1} micronutrient) on other interaction which was recorded (2.467 tones), followed by @ 2.5 kg.m^2 FYM only (1.980 tones).The minimum total yield per plastic house 220 m^2 was noticed with Control (0.835 tones) .FYM combination with NPK played significant role in affecting total yield per plastic house 220 m^2 where superior interaction (2.5 kg.m^2 FYM + 46.29 g.m^2 NPK) on other interaction which was recorded (2.896 tones), followed by @ 2.5 kg.m^2 FYM + 30.86 g.m^2 NPK (.390 tone) .The minimum total yield per plastic house 220 m^2 was noticed with Control (0.666 tones).The maximum total yield per plastic house 220 m^2 (3.172 tones) were indicated in interaction between FYM_2 and NPK_2 under M_1 followed by @ FYM_1 and NPK_2 under M_1 (2.916 tones). The minimum total yield per plastic house 220 m^2 was noticed with Control (0.568 tones). These result are in close conformity with the finding of [1] **and** [9]

CONCLUSIONS

Based on the result of experiment it was aimed to identify suitable treatment for tomato with respect to productivity of tomato during November to May .it may be concluded that the treatment T_{18} (2.5kg . m^2 FYM + 46.29 g. m^2 NPK + 2.5 ml. l^{-1} micronutrient) was recorded the best among treatment combinations on yield. The treatment T_{18} was obtained the highest total yield (3.172 tones in 220 m^2) under protected cultivation.

DISCUSSIONS

Despite its economic importance, growers are not in a position to produce high productivity due to various biotic (pest and diseases), abiotic (rainfall, temperature, relative humidity and light intensity) and crop factors (flower and fruit drop). Due to erratic behavior of weather, the crops grown in open field are often exposed to fluctuating levels of temperature, humidity, wind flow etc. Besides this, limited availability of land for cultivation hampers the vegetable production. Hence, to obtain a good production during off season, there is a need to cultivate tomato under protected conditions such as green house, poly house and net house etc. The integration of organic manures such as FYM in combination with inorganic fertilizers NPK and micronutrients was found significant in improving the overall plant growth, yield than the sole application of either of these nutrients.

This combination result in solubilization of plant nutrients which lead to increased up take of NPK. Mixing of organic and inorganic nutrients reduce the nutrient losses, improving the fertilizer use efficiency thus increasing the soil nutrient availability. And involved in cell division, photosynthesis, metabolism of carbohydrates, regulated proper translocation of photosynthesis and stimulated enzyme activity which in turn might have increased the rate of growth and positive development in yield characters which is resulted in high yield of tomato Further, application of organic manure along with N P K and micronutrient which might have accelerated the vigorous growth increase of flower set flower, fruit per plant and total yield of tomato plant. It is also relevant to mention that tomato plants nourished with interaction among NPK, FYM under micronutrient gave maximum yield parameter.

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APPENDICES

Table 1: Effect of FYM, NPK and Micronutrients on Number of Fruit per Plant of Tomato (*Lycopersicon Esculentum* Mill.)

Treatments		**Number of Fruits per Plant of Tomato**	**Treatments**	**Number of Fruits per Plant of Tomato**		
Main Plot (M)				**NPK$_0$**	**NPK$_1$**	**NPK$_2$**
M$_0$		41.35	**M$_0$**	28.43	42.86	52.76
M$_1$		51.67	**M$_1$**	35.83	50.74	68.44
	F – test	S	F – test		S	
	S. Ed. (±)	0.614	S. Ed. (±)		0.808	
	CD at 5%	2.643	CD at 5%		1.862	
Sub Plot NPK (I)			**Treatments**	**F$_0$**	**F$_1$**	**F$_2$**
NPK$_0$		32.13	**M$_0$**	27.32	41	55.72
NPK$_1$		46.8	**M$_1$**	34.48	53.07	67.45
NPK$_2$		60.6			S	
	F – test	S	F – test		1.14	
	S. Ed. (±)	0.571	S. Ed. (±)		2.353	
	CD at 5%	1.317	CD at 5%			
Sub Sub Plot FYM (F)			**Treatments**	**F$_0$**	**F$_1$**	**F$_2$**
F$_0$		30.9	**NPK$_0$**	22.03	31.02	43.34
F$_1$		47.04	**NPK$_1$**	29.11	45.74	65.54
F$_2$		61.59	**NPK$_2$**	41.56	64.34	75.88
	F – test	S	F – test		S	
	S. Ed. (±)	0.806	S. Ed. (±)		1.396	
	CD at 5%	1.664	CD at 5%		2.882	
Treatments	**Number of Fruits per Plant of Tomato**					
	M$_0$			**M$_1$**		
	NPK$_0$	**NPK$_1$**	**NPK$_2$**	**NPK$_0$**	**NPK$_1$**	**NPK$_2$**
F$_0$	18.92	25.39	37.66	25.15	32.83	45.47
F$_1$	27.3	42.53	53.17	34.75	48.95	75.52
F$_2$	39.08	60.65	67.44	47.59	70.43	84.33
F – test			S			
S. Ed. (±)			1.975			
CD at 5%			4.075			

Table 2: Effect of FYM, NPK and Micronutrients on of Fruit Weight of Tomato (*Lycopersicon esculentum* Mill.)

Treatments		**Fruit Weight (g) of Tomato**	**Treatments**	**Fruit Weight (g) of Tomato**		
Main Plot (M)				**NPK$_0$**	**NPK$_1$**	**NPK$_2$**
M$_0$		61.54	**M$_0$**	58	60.56	66.06

Table 2: Contd.,

M_1		64.37	**M_1**	59.61	64.56	68.94
	F – test	S	F – test		S	
	S. Ed. (±)	0.21	S. Ed. (±)		0.525	
	CD at 5%	0.905	CD at 5%		1.21	
Sub Plot NPK (I)			**Treatments**	**F_0**	**F_1**	**F_2**
NPK_0		58.81	**M_0**	57.78	60.67	66.17
NPK_1		62.56	**M_1**	59.72	65	68.39
NPK_2		67.5			S	
	F – test	S	F – test		0.677	
	S. Ed. (±)	0.371	S. Ed. (±)		1.398	
	CD at 5%	0.855	CD at 5%			
Sub Sub Plot FYM (F)			**Treatments**	**F_0**	**F_1**	**F_2**
F_0		58.75	**NPK_0**	57.42	58.58	60.42
F_1		62.83	**NPK_1**	58.33	60.42	68.92
F_2		67.28	**NPK_2**	60.5	69.5	72.5
	F – test	S	F – test		S	
	S. Ed. (±)	0.479	S. Ed. (±)		0.83	
	CD at 5%	0.989	CD at 5%		1.712	
Treatments	**Fruit Weight (g) of Tomato**					
	M_0			**M_1**		
	NPK_0	**NPK_1**	**NPK_2**	**NPK_0**	**NPK_1**	**NPK_2**
F_0	57	57.67	58.67	57.83	59	62.33
F_1	57.83	58.33	65.83	59.33	62.5	73.17
F_2	59.17	65.67	73.67	61.67	72.17	71.33
F – test			S			
S. Ed. (±)			1.173			
CD at 5%			2.422			

Table 3: Effect of FYM, NPK and Micronutrients on Fruit Yield per Plant Tomato (*Lycopersicon esculentum* Mill.)

Treatments		**Yield per Plant (kg) of Tomato**	**Treatments**	**Yield per Plant (kg)of Tomato**		
Main Plot (M)				**NPK_0**	**NPK_1**	**NPK_2**
M_0		2.615	**M_0**	1.654	2.635	3.555
M_1		3.428	**M_1**	2.146	3.353	4.786
	F – test	S	F – test		S	
	S. Ed. (±)	0.031	S. Ed. (±)		0.048	
	CD at 5%	0.131	CD at 5%		0.112	
Sub Plot NPK (I)			**Treatments**	**F_0**	**F_1**	**F_2**
NPK_0		1.9	**M_0**	1.581	2.513	3.75
NPK_1		2.994	**M_1**	2.069	3.543	4.672
NPK_2		4.171			S	
	F – test	S	F – test		0.078	
	S. Ed. (±)	0.034	S. Ed. (±)		0.162	
	CD at 5%	0.079	CD at 5%			
Sub Sub Plot FYM (F)			**Treatments**	**F_0**	**F_1**	**F_2**
F_0		1.825	**NPK_0**	1.262	1.816	2.622
F_1		3.028	**NPK_1**	1.697	2.758	4.527
F_2		4.211	**NPK_2**	2.516	4.511	5.485
	F – test	S	F – test		S	
	S. Ed. (±)	0.055	S. Ed. (±)		0.096	
	CD at 5%	0.114	CD at 5%		0.198	
Treatments	**Yield per Plant (kg)of Tomato**					
	M_0			**M_1**		
	NPK_0	**NPK_1**	**NPK_2**	**NPK_0**	**NPK_1**	**NPK_2**
F_0	1.076	1.462	2.205	1.448	1.933	2.827

Table 3 : Contd.,

F_1	1.575	2.467	3.498	2.057	3.049	5.523
F_2	2.311	3.977	4.963	2.932	5.077	6.008
F – test			S			
S. Ed. (±)			0.136			
CD at 5%			0.28			

Table 4: Effect of FYM, NPK and Micronutrients on Fruit Yield per Plastic House Tomato (*Lycopersicon esculentum* Mill.)

Treatments			**Treatments**	**Fruit Yield per Plastic House (220 m^2) (Tones) of Tomato**		
Main Plot (M)				**NPK_0**	**NPK_1**	**NPK_2**
M_0		1.381	**M_0**	0.873	1.391	1.877
M_1		1.81	**M_1**	1.133	1.771	2.527
	F – test	S	F – test		S	
	S. Ed. (±)	0.016	S. Ed. (±)		0.026	
	CD at 5%	0.069	CD at 5%		0.059	
Sub Plot NPK (I)			**Treatments**	**F_0**	**F_1**	**F_2**
NPK_0		1.003	**M_0**	0.835	1.327	1.98
NPK_1		1.581	**M_1**	1.092	1.871	2.467
NPK_2		2.202			S	
	F – test	S	F – test		0.041	
	S. Ed. (±)	0.018	S. Ed. (±)		0.086	
	CD at 5%	0.042	CD at 5%			
Sub Sub Plot FYM (F)			**Treatments**	**F_0**	**F_1**	**F_2**
F_0		0.964	**NPK_0**	0.666	0.959	1.384
F_1		1.599	**NPK_1**	0.896	1.457	2.39
F_2		2.224	**NPK_2**	1.328	2.382	2.896
	F – test	S	F – test		S	
	S. Ed. (±)	0.029	S. Ed. (±)		0.051	
	CD at 5%	0.06	CD at 5%		0.105	
Treatments	**Fruit yield per Plastic House (220 m2) (Tones) of Tomato**					
	M_0			**M_1**		
	NPK_0	**NPK_1**	**NPK_2**	**NPK_0**	**NPK_1**	**NPK_2**
F_0	0.568	0.772	1.165	0.765	1.02	1.492
F_1	0.832	1.303	1.847	1.086	1.61	2.916
F_2	1.221	2.1	2.62	1.548	2.681	3.172
F – test			S			
S. Ed. (±)			0.072			
CD at 5%			0.148			

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